

H. W. DREW.
GRAIN CAR DOOR CONSTRUCTION.
APPLICATION FILED NOV. 12, 1910.

1,005,817.

Patented Oct. 17, 1911.

3 SHEETS—SHEET 1.

Fig. 1.

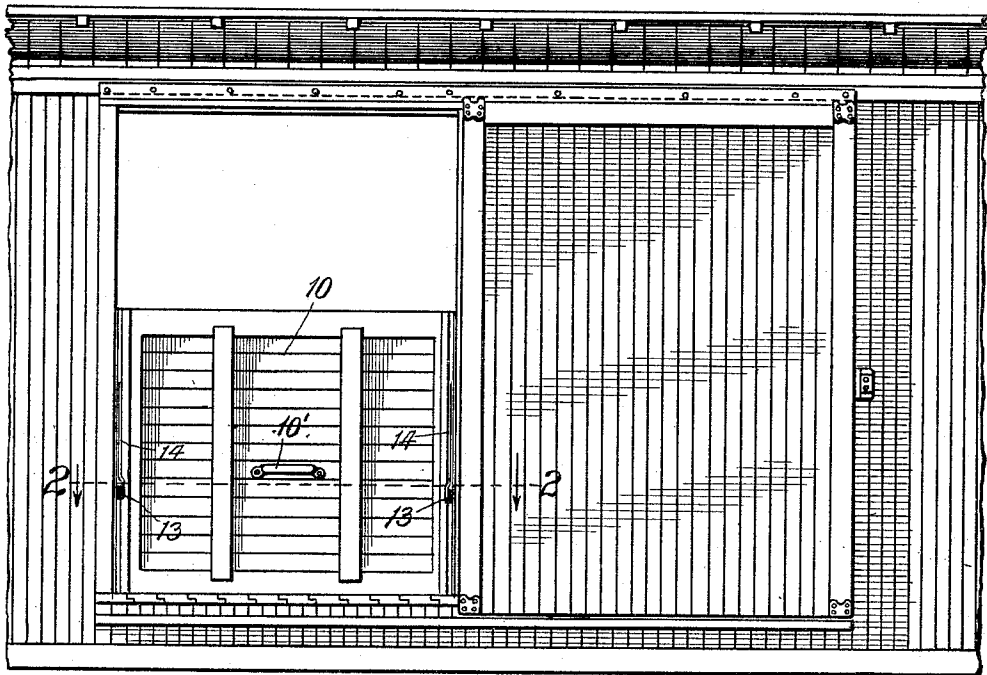


Fig. 2.

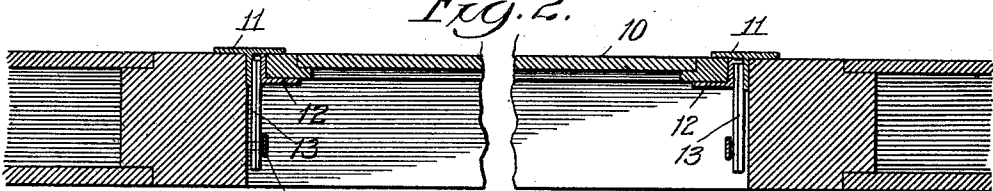


Fig. 3.

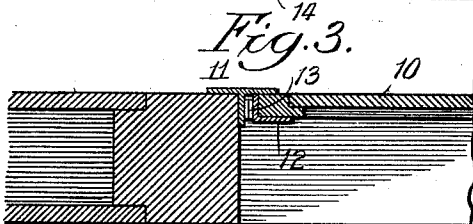


Fig. 4.



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3 SHEETS—SHEET 2.

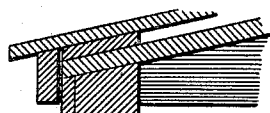


Fig. 5.



Fig. 6.



Fig. 7.

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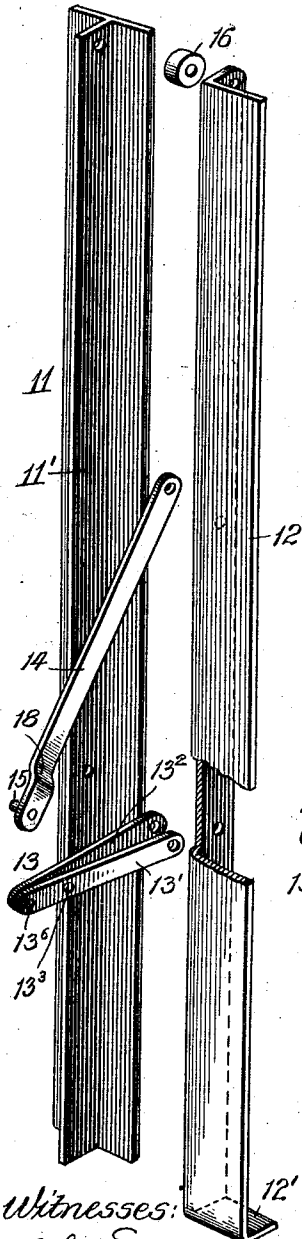
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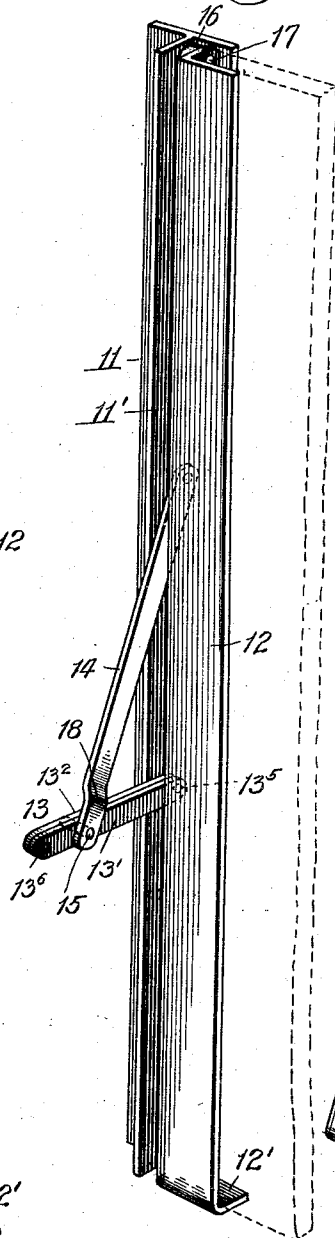
3 SHEETS-SHEET 3.

Fig. 8.



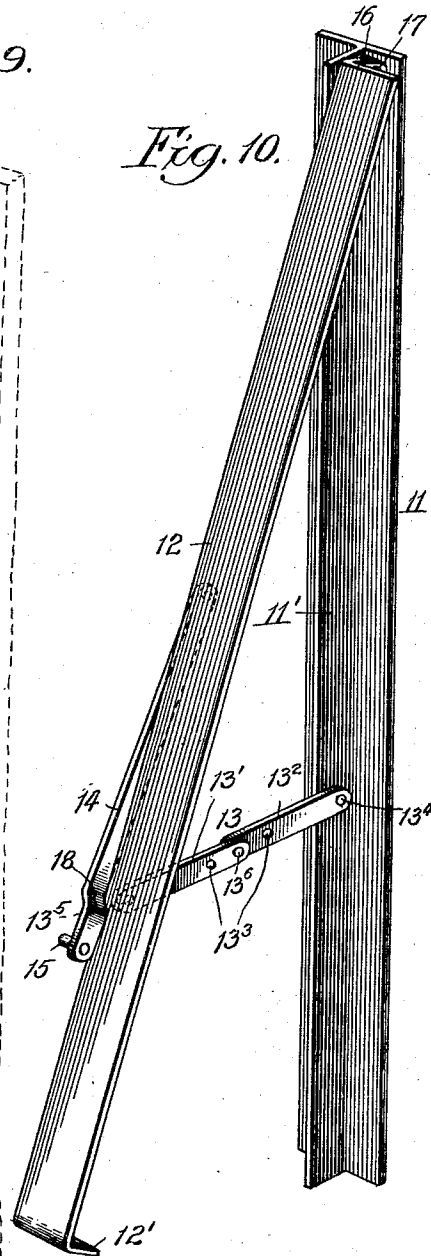
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Fig. 9.



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Fig. 10.



UNITED STATES PATENT OFFICE.

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GRAIN-CAR-DOOR CONSTRUCTION.

1,005,817.

Specification of Letters Patent.

Patented Oct. 17, 1911.

Application filed November 12, 1910. Serial No. 592,046.

To all whom it may concern:

Be it known that I, HERBERT W. DREW, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Grain-Car-Door Construction, of which the following is a specification.

This invention relates to improvements in grain car door construction and provides a construction whereby the door of a grain car may be easily maintained in a closed position or allowed to open at the will of the operator.

Referring to the drawings—Figure 1 is a side elevation of a grain car showing the grain door in closed position. Fig. 2 is a transverse section along the line 2, 2 of Fig. 1. Fig. 3 is a partial sectional view along the same line as Fig. 2 and showing the locking mechanism in a position preparatory to opening the door. Fig. 4 is a partial sectional view along the same line as Figs. 2 and 3 showing a part of the door in open position. Fig. 5 is a vertical sectional view through the car door showing the mechanism in locked position. Fig. 6 is a vertical sectional view along the same line as Fig. 5 showing the door preparatory to the opening of the same. Fig. 7 is a vertical sectional view on the same line as Figs. 5 and 6 showing the door in an open position. Fig. 8 is a perspective of the details of the operative mechanism. Fig. 9 is a perspective showing the mechanism in locked position. Fig. 10 is a perspective showing the mechanism in an open position.

The grain door construction and general car construction is the same as that shown and claimed in my prior application No. 547,107, filed March 3, 1910.

The object of this invention is to provide in place of the operating mechanism for the grain door shown in that application another means of holding the grain door in locked closed position or to permit of its being easily opened.

The same numerals refer to the same elements throughout the drawings.

The numeral 10 designates a grain door having a handle 10' to enable it to be readily opened and closed, manually if desired.

11 designates a T-shaped member with a vertical flange 11'.

12 designates an angular member to which

the grain door is secured on either side. These angular members 12 have inwardly turned flanges 12' at their bottom extremity, these flanges 12' being inwardly turned on the bottom edge of the grain door 10. The locking mechanism 13 is composed of the two members 13', 13² pivoted to the door at 13⁵ and to the flange 11' at 13⁴, respectively, and hinged to each other at 13⁶. These members 13' and 13² have apertures 13³ referred to hereinafter. The numeral 14 is used to designate the locking lever which is pivoted at one extremity to the side flange of the member 12 and carries at its other extremity a stud 15. The angular member 12 is pivoted at 17 to the flange member 11' and is spaced therefrom by means of a collar 16. Near the lower extremity of the locking lever 14 the latter is bent inwardly then downwardly as indicated at 18 for a purpose hereinafter described.

The members 13' and 13² are made of equal length and their axes of rotation 13⁴ and 13⁵ when the door is closed coincide so that when the door is in a closed position and the members 13', 13² lie together, as indicated in Fig. 9, for example, they may rotate about a single axis.

In the operation of this device when the door is closed and the two members 13' and 13² come into juxtaposition preparatory to filling the car with grain, the locking lever 14 is swung downwardly and the stud 15 is inserted in the apertures 13³, the natural resiliency of the locking lever 14 permitting it to be sprung outwardly a sufficient extent to permit the said insertion of 15. As indicated in Fig. 9 this holds the members 13', 13² in locked position and prevents the opening of the grain door 10. When it is desired to open the door the lever 14 is disengaged from the members 13', 13² and the latter are rotated into the position indicated by dotted lines in Fig. 6, whereupon the door will open either by reason of the weight of the inclosed grain or by means of a slight pull on the handle 10'.

In reversing the operation when the door is open a slight tap at 13⁶ where the locking members are hinged will throw them out of dead center and permit the door to be easily closed, whereupon it may be locked as shown in the drawings. This device furnishes a simple means of holding the door in locked position and is easily operated. It is to be

noted that the collar 16 spaces the members 11 and 12 far enough apart to allow the locking members to lie in a closed position and out of the way between the flange 11' and the inwardly turned flange of the member 12.

By fitting the side of the door opening with the T-beams 11 I obviate a very common difficulty in this class of cars, namely, the necessity of frequent coopering, which is not only comparatively costly, but necessitates the withdrawal of the car from active service. The T-beam being fastened to the side of the car, as shown and described, reinforces the side boards at their weakest point and although they may bulge and warp this construction insures an even contact between the door and the side flange of the T-member and prevents the escape of grain as well as insuring the easy operation of the door by preventing any jamming.

I claim:

1. In a car, a grain door, a flanged member connected to one side of said door, a T-member connected to said car adjacent to said door, a pivotal connection between said first named member and said T-member, and a hinged locking device connected to each of said members whereby when said locking device is in one position said door is locked and when said locking device is in another position said door may be opened.

2. In a car, a grain door, a flanged member connected to said door, a T-member, said door being hingedly connected to said T-member by means of said flanged member, and a locking device, said locking device comprising check members, said check members being mutually pivoted at one extremity and pivoted at their other extremities, one to said T-member and one to said flanged member, said last named pivotal connections being adjacent when said door is in closed position.

3. In a car, a grain door, a flanged member connected to said door, a T-member, said door being hingedly connected to said T-member by means of said flanged member, a locking device, said locking device comprising check members, said check members being mutually pivoted at one extremity and pivoted at their other extremities one to said T-member and one to said flanged member, said last named pivotal connections being adjacent when said door is in closed position, and a locking lever adapted to engage said check members and hold them in a locked position when said door is closed.

4. In a car, a grain door, a flanged member connected to said door, a T-member, said door being hingedly connected to said T-member by means of said flanged member, a locking device, said locking device comprising check members, said check members being mutually pivoted at one extremity and

pivoted at their other extremities one to said T-member and one to said flanged member, said last named pivotal connections being adjacent when said door is in closed position, and a locking lever adapted to engage said check members and hold them in an outwardly extended position with a longitudinal axis in a plane perpendicular to said door whereby they may act on a dead center in relation to said door to prevent the opening of same.

5. In a car, a grain door, a flanged member connected to one side of said door, a T-member connected to said car adjacent the said door, a pivotal connection between said first named member and said T-member, said flanged member being spaced from said T-member, a hinged locking device connected to each of said members whereby when said locking device is in one position said door is locked and when said locking device is in another position said door may be opened, and a locking lever for holding said locking device in operative position, said locking lever and locking device being adapted to fit into the space between said flanged member and said T-member when not in locked position.

6. In a car, a grain door, a flanged member connected to said door, a T-member, said door being hingedly connected to said T-member by means of said flanged member, a locking device, said locking device comprising check members, said check members being mutually pivoted at one extremity and pivoted at their other extremities, one to said T-member and one to said flanged member, said last named pivotal connections being adjacent when said door is in closed position, and a locking lever carrying a stud at its lower extremity, said stud being adapted to register with openings in said check members to hold the latter in a locked position when said door is closed.

7. In a car, a grain door, a flanged member connected to said door, a T-member, said door being hingedly connected to said T-member by means of said flanged member, a locking device, said locking device comprising check members, said check members being mutually pivoted at one extremity and pivoted at their other extremities, one to said T-member and one to said flanged member, said last named pivotal connections being adjacent when said door is in closed position, and a locking lever pivoted to the flange of said T-member at one extremity and carrying a stud at its lower extremity, said stud being adapted to register with openings in said check member to hold the latter in a locked position when said door is closed, said locking lever being on same near its lower extremity.

8. In a device of the class described, an angle-bar carrying a door, a T-bar having

its stem flange parallel with the side flange of said angle-bar, said T-bar being secured to a side of a door opening, a pivotal connection between the said bars, a pair of
 5 check members one being pivotally connected at one extremity to the head flange of said T-bar, the other being pivotally connected at one extremity to the side flange of said angle-bar, said check members being pivotally
 10 connected to each other at their other extremities, said first named pivotal connections lying on the same line when the grain door is in a closed position whereby said check members may rotate together about said pivotal
 15 connections as a common axis, and a locking lever adapted to engage and hold said check members in a dead center position in relation to said door to prevent the opening of same.

20 9. In combination with a car having a door opening, a T-beam having a stem flange, and a door, said T-beam being attached to the side of said door opening, and said door being pivoted to the stem flange of
 25 said T-beam, whereby when said door is swung to a closed position it will register with one angle of said T-beam.

10. In a car provided with a door opening, a door-jamb, a T-bar having its stem
 30 flange and one head flange secured to the edge of said door jamb, the other head flange of said T-bar projecting partially into said door opening, a door having an angle-bar secured to its edge adjacent said door
 35 jamb, one edge of said angle-bar contacting with the free head flange of said T-bar when said door is in a closed position whereby the said head flange may act as a stop for said door.

40 11. In a car provided with a door opening, a T-bar having its stem flange and one head flange secured to an edge of said door opening, the other flange of said T-bar projecting partially into said door opening, a
 45 door for said opening, an angle-bar secured

to the edge of said door adjacent the edge of said door opening, said angle-bar having an inwardly turned flange at one extremity, said flange being secured to said door, one
 50 edge of said angle-bar contacting with the free head flange of said T-bar when said door is in a closed position, whereby a grain-tight joint is formed between said door and said car.

12. In a car provided with a door opening, a T-bar having its stem flange and one
 55 head flange secured to the edge of said door opening, the other head flange of said T-bar projecting partially into said door opening, a door for said opening, an angle-bar
 60 lining the edge of said door adjacent the edge of said door opening, said angle-bar having an inwardly turned flange at one extremity secured to said door, said door
 65 being pivoted to said T-bar near the other extremity of said angle-bar, one edge of said angle-bar contacting with the free head flange of said T-bar when the door is in a
 70 closed position whereby said T-bar will act as a door stop for said door and whereby a grain-tight joint will be provided between said door and said car.

13. In a car provided with a door opening, T-bars lining the edges of said door
 75 opening, said T-bars each being secured to one edge of said door opening by a head flange and stem flange and each having the other head flange projecting partially into
 80 said door opening, a door for said opening having its side edges lined with angle-bars, one edge of each of said angle-bars contacting with the free head flange of one of said
 T-bars, said angle-bars being pivoted to said T-bars.

In testimony whereof, I have subscribed
 85 my name.

HERBERT WILLIAM DREW.

Witnesses:

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